



Does Garlic Support A Healthy Immune System?

Garlic is a member of the lily family, related to onions and chives, and offers many health benefits other than deterring vampires. There is now ample scientific evidence and proof of its beneficial effect on both a healthy immune system and the circulatory system.

The active ingredients in garlic are thiosulfinates, of which the predominant one is allicin, sulfoxides such as alliin and dithiins, of which ajoene is the most widely researched. These compounds are not only responsible for the pungent odor of garlic, but also for its benefits to your health. Among the other components of garlic are selenium, manganese and vitamins B6 and C.

Before considering the other effects of garlic on your health, we shall first consider how it benefits the immune system. The immune system is an essential part of human biology, and protects your body from invasion by pathogenic organisms. Without the immune system your body would rapidly be overcome by bacteria, viruses, fungi, parasites and other foreign bodies, and your body would rapidly fail to function.

The immune system consists of several components that can act in concert to protect you from these foreign invaders. It is too large a subject to be discussed in this article, although its major components are the thymus, the spleen, the lymphatic system, bone marrow, antibodies, and white blood cells of various types. Without it your body would rapidly be broken down to nothing, and would revert to a skeleton in a few weeks.

It is your immune system that causes inflammation, fevers, boils and pus. These are all examples of the immune system at work to protect your body, and even a fever is the immune system raising your body temperature to one that is unfavorable to invaders. Arthritis and hay fever are other examples of how your immune system reacts to invaders, in one case mistaking damaged joint tissue as being foreign and responding by causing inflammation to protect the joint, and in the other a reaction to invading bodies such as pollen.

So what does garlic do to help your immune system? Let's first have a look at the inflammatory reaction of the immune system, a prime example of which is rheumatoid arthritis. The inflammation is caused by compounds known as prostaglandins and thromboxanes, the biosynthesis in your body of which requires the enzymes lipoxygenase and cyclooxygenase (LOX and COX). If these enzymes can be inhibited, then the inflammatory response can be modulated, and LOX and COX inhibition is one of the studies currently being carried out into the treatment of some forms of cancers.



However, where garlic comes in here is that two effective non-reversible inhibitors of LOX and COX are the chemicals Di(1-propenyl) sulfide and ajoene, and both of these are components of garlic. Garlic can therefore be used, not to stop the inflammatory response altogether since it is an essential part of the immune system for certain infections, but to modulate it and protect you from the more severe effects of conditions such as arthritis - both osteo and rheumatoid - and asthma, which is also an immune response.

Allicin has been shown to work with vitamin C to kill certain types of bacteria and viruses, and can help the immune system to protect you from colds and flu, Candida and some gastroenteric viruses. It can also be effective against some of the more powerful pathogens such as tuberculosis. It should be stressed that garlic will not cure these conditions, but help the immune system to deal with them. In fact with respect to the common cold, a study at Munich University has shown that garlic significantly reduces the activity of kappa-B, which is a nuclear transcription factor that mediates the inflammatory response. In other words, the cold symptoms are greatly reduced.

This is significant, since increased kappa-B levels can be triggered off by any pathogen that causes an inflammatory response by the immune system (e.g. infection, allergens, physical trauma). The study showed that unfertilized garlic provided a reduction of 25% in kappa-B activity, while garlic fertilized with sulfur reduced it by 41%.

There have been other studies carried out that demonstrated that *Helicobacter pylori*, the organism responsible for gastritis and peptic ulcers, was less active in those that took a regular amount of garlic in their diet. This was shown by measuring the antibody concentration, and while *H.pylori* was found in both sets (with and without garlic in the diet), the antibody count in the garlic-eating set was much lower indicating a significantly lower population of the bacterium.

Another unexpected result was that a group taking both cooked and uncooked garlic had a lower antibody count than those taking either cooked or uncooked. This appears to indicate that cooking changes the chemical nature of garlic, so that both forms work together to provide a more potent effect than cooked and uncooked separately.

What has also been established is that odorless garlic has less of an effect on the immune system than natural garlic, so while the odorless type is more socially acceptable, it is not so good at supporting your immune system. The allicin levels in odorless garlic are very much lower than in the natural bulb.

Garlic has also been found to be able to help with certain types of cancer. Two servings weekly have been found effective in protecting from colon cancer. Allicin has been found to protect colon cells from the toxic effect of various chemicals, and also reduce



the growth rate of any cancerous cells that develop. People in Southern Europe consuming large quantities of garlic have been shown to be 39% less liable to contract cancer of the mouth and pharynx, and 57% less liable to contract cancer of the esophagus. It also had an effect on other cancers, including breast and ovarian cancer. However, the effect of onions on such cancers is even greater.

Most people are aware of the cardiovascular benefits of garlic, and it can reduce blood pressure, cholesterol levels and serum triglyceride levels, thus protecting against the harmful condition of atherosclerosis and also of diabetic heart disease. Reduced atherosclerosis means a reduced chance of heart attacks or strokes. It also appears to possess antioxidant properties.

There is no doubt that garlic helps to promote a healthy immune system, although the odorless form appear to be less effective in this respect as natural garlic, and there is evidence that a diet containing uncooked and cooked garlic can be more effective than either of these alone.



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